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Applicant: Hajime YAGI
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REAR-VIEW MIRROR HAVING LAMP
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Sir:

Further to Applicants' claim of priority under 35 U.S.C. 119 from foreign application, Japanese Patent Application No. 2003-026438, filed February 3, 2003, Applicants submit herewith a Certified English Translation of said original foreign application.

Respectfully submitted,

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VERIFICATION OF TRANSLATION

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Japanese Patent Application No. 2003-026438, filed on February 3, 2003.

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(TRANSLATION)

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This is to certify that the annexed is a true copy of the following application as filed with this Office.

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APPLICANT(S) : Ichikoh Industries, Ltd.

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[Type of Document] Specification

[Title of the Invention] Outer mirror having lamp and sideview mirror having lamp

[Scope of Claims for Patent]

5 [Claim 1] An outer mirror for a vehicle, comprising:

a lamp that includes

a window that is formed at a portion of a chassis;

a reflector that reflects light toward the window, provided inside the chassis; and

10 a light source that emits the light toward the reflector, provided inside the chassis at a place corresponding to other portion of the chassis.

[Claim 2] The outer mirror according to claim 1, wherein the chassis is a garnish, and further comprising:

15 a mirror housing that houses a mirror, wherein the reflector is provided on a back side of the mirror housing.

[Claim 3] The outer mirror according to claim 1 or 2, wherein the light source includes light emitting diodes that are surface-mounted on a flexible board.

20 [Claim 4] The outer mirror according to claim 1, wherein the window includes

a lens that transmits the light reflected from the reflector;

and

a cover that covers a backside surrounding-area,

25 the cover forms a space of a predetermined capacity, and

the reflector and the light source including the light emitting diodes that are surface-mounted on the flexible board are disposed in the space.

5 [Claim 5] The outer mirror according to claim 4, wherein the chassis is a garnish having the cover, and the outer mirror is formed by putting the garnish on the mirror housing.

[Claim 6] A sideview mirror for a vehicle, comprising:
a lamp that includes
10 a window that is formed in a part of the chassis between a rear of a chassis and an outside of an outside edge of the mirror at a portion of the chassis;
a reflector that reflects light toward the window, provided inside the chassis; and
15 a light source that emits the light toward the reflector, provided inside the chassis at other portion of the chassis.

[Claim 7] The sideview mirror according to claim 6, wherein the light source includes light emitting diodes that are surface-mounted on a flexible board.

20 [Claim 8] The sideview mirror according to claim 6 or 7, wherein the window is displaced from surface of the mirror in a direction of movement of the vehicle.

[Detailed Description of the Invention]

[0001]

25 [Field of the Invention]

The present invention relates to an outer mirror having a lamp and an sideview mirror having a lamp, and more particularly, to a vehicle outer mirror having a lamp and a sideview mirror having a lamp that have a flexibility of light distribution layout and design.

5 [0002]

[Prior Art]

Fig. 12 is a plan view depicting the overall configuration of a conventional sideview mirror. A sideview mirror mounted on the right side of a vehicle body (so as to be slightly inclined rearward at the time of use), and having a mirror plate of an oblong and substantially rectangular shape out of electric sideview mirrors for small passenger cars, will be explained below as this sideview mirror.

[0003]

As shown in Fig. 12, the sideview mirror includes a mirror base 101 mounted on the vehicle body and a mirror body 102 supported thereon. A gear box 103, a frame 104, an actuator 105, a mirror fitting portion 106, a mirror member 107, and a lamp unit 108 are assembled inside the mirror body 102.

[0004]

20 The gear box 103 is constructed such that the mirror body 102 is displaced by swinging between a use position and a storage position by swinging and displacing the mirror body 102 with respect to the mirror base 101 within a range shown by arrow r. The frame 104 is integrally provided in a protruding manner with the gear box 103 and
25 the actuator 105 is mounted on the rear side of the frame 104. The

mirror fitting portion 106 is supported by an adjusting gear or the like (not shown) provided in the actuator 105, and the installation angles of the mirror fitting portion 106 and the mirror member 107 are fine-tuned to the right and left directions (the directions shown by arrow s) and the up and down directions (the directions shown by arrow u) by driving the
5 adjusting gear or the like.

[0005]

Fig. 13 is a cross section depicting the schematic configuration around the lamp unit of the sideview mirror. As shown in this figure,
10 the mirror body 102 is formed of a molded article made of a synthetic resin, and has a so-called two-piece structure including a housing body 109 and a cover body 110 that covers the backside of the housing body 109, wherein the mirror member 107 is installed therein in front, with a mirror window 112 that allows a mirror of the mirror member 107 to face
15 outside. A lamp unit 108 serving as a turn signal lamp, a foot lamp, or the like is fitted between the housing body 109 and the cover body 110.

[0006]

The lamp unit 108 is a box having light emitting diodes (LEDs) 113 as a light source or a normal lamp built therein, and includes a
20 base 114 having a surface for mounting the lamp unit 108 on the other end portion on the back of the housing body 109 and an irradiation unit 116 serving as a transparent lens, protruded from an opening 115 formed in the cover body 110. The base 114 of the lamp unit 108 is configured such that it is inserted from the opening 115 in the cover
25 body 110 and coupled with the housing body 109 by a clip 117 from the

back.

[0007]

It is not always necessary to make the lamp unit 108 protrude, and the lamp unit 108 may be smooth on the design face. The lamp
5 unit 108 may be sub-assembled (formed in a unit), and coupled with the housing body 109 together with the cover by a method other than using the clip 117 such as by adhesion or by sound welding (for example, see Patent Literature 1).

[0008]

10 In Fig. 13, a layer down portion is formed in the opening 115 in the cover body 110. A flange 118 is formed in the lamp unit 108 so as to be fitted in and coupled with the layer down portion. The LEDs 113 built in the lamp unit 108 are for outputting spontaneous emission light, and a terminal 119 of the LEDs 113 is provided in a protruding manner
15 in a connector 121 formed outside of the lamp unit 108 via a metal substrate 120 (for example, see Patent Literature 2).

[0009]

Fig. 14 is a plan view depicting the overall configuration of another sideview mirror. This sideview mirror 130 is of such a type
20 that the housing is covered with a cover 131. In the sideview mirror 130, a lamp unit 132 is housed away from a sideview mirror fitting portion (not shown) to the vehicle. The lamp unit 132 includes a lens 133.

[0010]

25 The light from the lamp unit 132 reaches outside through the

lens 133. The lens 133 is positioned at half the height of the cover 131 and extends outside substantially from half the length of the cover 131. The outer end of the lens 133, being the opposite side of the mirror fitting portion, is provided so as to reach the end of the cover that surrounds the mirror member of the sideview mirror 130.

[0011]

Fig. 15 is a longitudinal section depicting the configuration of the lamp unit. As shown in Fig. 15, the lamp unit 132 includes a support body 134. A substrate 135 is supported on the support body 134. The substrate 135 supports a plurality of dome-shaped lamp bulbs like LEDs 136. The end portion of a lens 137 is fixed at the end portion of the support body 134. The LED 136 is inserted into an opening in a reflector 138. The reflector 138 is for distributing the light from the LEDs 136 forward toward the lens 137.

[0012]

The lamp unit 132 includes at least one LED 139 at the end portion opposite to the sideview mirror fitting portion. The light from the LED 139 is directed laterally and outward with respect to the advancing direction F of the vehicle. The light has sufficient brightness so that the other road users on the road notice the vehicle. Other LEDs 136 are provided within the range inside of the lens 137 on the backside (on the vehicle advancing direction F side) of the cover. As a result, the light from the LEDs 136 is irradiated forward, substantially in the vehicle advancing direction F through the lens 137 (for example, see Patent Literature 3).

[0013]

[Patent Literature 1]

Japanese Patent Application Laid-open No. H10-297362

(Pages 3 and 4, Fig. 3)

5 [Patent Literature 2]

Japanese Patent Application Laid-open No. 2002-337606

(Pages 3 to 4, Figs. 1 and 2)

[Patent Literature 3]

Japanese Patent Application Laid-open No. 2002-19519

10 (Page 6, Fig. 2)

[0014]

[Problems to be Solved by the Invention]

According to the conventional outer mirror having a lamp,
however, since light is emitted from the center of LEDs 113, 136, 139 as
15 the light source, even if the lamp illuminates, portions of the lamp
where the light source is provided are dotted with intensively glowing
points. Thus, uniformity and upscale image as design are
deteriorated.

[0015]

20 In the case of an outer mirror in which a large space cannot be
secured for a lamp, the layout of the light source and the design of the
luminous intensity distribution of the lamp unit 108, 132 are largely
limited, and thus the design of the lamp unit is prioritized over the
design of the entire outer mirror. Under such circumstances,
25 auto-parts cannot be designed or manufactured while satisfying recent

car manufacturing and sales circumstances in which design is a key element of car sales strategy.

[0016]

It is an object of the present invention to an outer mirror having
5 a lamp and a sideview mirror having a lamp, wherein light source itself is inconspicuous and a flexibility of light distribution layout and design can be highly maintained.

[0017]

[Means to Solve the Problems]

10 The outer mirror for a vehicle, according to one aspect of the present invention includes a lamp that has a window that is formed at a portion of a chassis, a reflector that reflects light toward the window, provided inside the chassis, and a light source that emits the light toward the reflector, provided inside the chassis at other portion of the
15 chassis.

[0018]

The light from the illumination apparatus is irradiated from a window that is formed at a portion of a chassis, and opened to the final irradiation direction of light. The position of the window may be
20 anywhere in the vertical direction or the horizontal direction of the chassis, but the window is opened toward the final irradiation direction. One or a plurality of windows may be provided. A reflector is provided inside the chassis, corresponding to the inner part of the window, as seen from the final irradiation direction, and reflects light toward the
25 final irradiation direction. A light source is provided at backside the

chassis at other portions of the window, and emits the light toward the reflector. In the illumination apparatus including these, the light from the light source is completely indirectly distributed by the reflector.

[0019]

5 The outer mirror according to another aspect of the present invention, wherein the chassis is a garnish, and further comprising, a mirror housing that houses a mirror, wherein the reflector is provided on a back side of the mirror housing.

[0020]

10 The outer mirror is generally arranged inside of a mirror housing for ensuring a rotation adjustment function of the mirror. In the present invention, since the reflector is formed on the back of the mirror housing (on the surface opposite to the surface having the mirror) by deposition, plating, or high reflection coating, the illumination apparatus
15 can be attached to the outer mirror without requiring an excess part or space.

[0021]

 The outer mirror according to still another aspect of the present invention, wherein the light source includes light emitting diodes that
20 are surface-mounted on a flexible board.

[0022]

 When the LEDs mounted on a flexible board are used as the light source, the flexibility in the layout is considerably improved. That is, the illumination apparatus can be formed in the various parts of the
25 outer mirror. Specifically, the illumination apparatus can be formed not

only in the central portion on the back of the outer mirror, but also on the upper back, the lower back, and the front side depending on the function to be provided.

[0023]

5 The outer mirror according to still another aspect of the present invention, wherein the window includes a lens that transmits the light reflected from the reflector; and a cover that covers a backside surrounding-area, the cover forms a space of a predetermined capacity, and the reflector and the light source including the light emitting diodes
10 that are surface-mounted on the flexible board are disposed in the space.

[0024]

 In this manner, a thin illumination apparatus can be sub-assembled (formed in a unit), thereby improving the labor
15 effectiveness. In other words, by integrating the chassis with the light source, the reflector, and the cover, handling becomes easy. The lens may be integrated with the garnish, or a separate lens may be fitted. When the lens is fitted, the lens may be adhered or a packing may be fitted. When there is a plurality of windows, a cover may be provided
20 from the back for each window, or a cover may be provided so as to enclose all windows from the back. Further, by sealing the cover and the garnish, the illumination apparatus can be sealed so as to be waterproof.

[0025]

25 The outer mirror according to still another aspect of the present

invention, wherein the chassis is a garnish having the cover, and the outer mirror is formed by putting the garnish on the mirror housing.

[0026]

5 In an outer mirror in which the garnish is covered on the mirror housing, if a thin illumination apparatus is sub-assembled (formed in a unit), and integrated with the garnish, excess consideration is not required during the assembly operation, thereby improving the labor effectiveness.

[0027]

10 A sideview mirror for a vehicle, comprising: a lamp that includes a window that is formed in a part of the chassis between a rear of a chassis and an outside of an outside edge of the mirror at a portion of the chassis; a reflector that reflects light toward the window, provided inside the chassis; and a light source that emits the light toward the
15 reflector, provided inside the chassis at other portion of the chassis.

[0028]

The window opened on the back of the chassis is a window of the illumination apparatus that emits light whose final irradiation direction is the advancing direction of the vehicle. On the other hand,
20 the window opened in a part of the chassis positioned outside of the outer end of the mirror is a window, which emits light whose final irradiation direction is a direction opposite to the advancing direction of the vehicle. The light reflected by the reflector, distributed completely indirectly, and emitted from the former window improves the visibility
25 from the rear-view mirror of the vehicle in front, and the light emitted

from the latter window improves the visibility from the following vehicle. The meaning of the chassis, the position and the number of the windows on the back of the chassis, the reflector, and the light source are the same as in the outer mirror according to the first aspect.

5 [0029]

The sideview mirror according to still another aspect of the present invention, wherein the light source includes light emitting diodes that are surface-mounted on a flexible board.

[0030]

10 When the LEDs mounted on the surface of a flexible board are used as the light source, the flexibility in the layout is considerably improved. That is, the light source can be arranged according to the design, even in a small space of the sideview mirror inside the chassis. Specifically, the illumination apparatus can be easily formed in the
15 central portion on the back of the sideview mirror, on the upper back, the lower back, and the sides.

[0031]

The sideview mirror according to still another aspect of the present invention, wherein the window is displaced from surface of the
20 mirror in a direction of movement of the vehicle.

[0032]

When the window is provided, shifted forward stepwise from the mirror surface, with respect to the advancing direction of the vehicle, the light emitted through the window is shielded by the chassis located
25 at a position corresponding to the outer end of the mirror, so as to

prevent that the light directly enters the eyes of a driver.

[0033]

[Embodiments of the Invention]

Exemplary embodiments of an outer mirror having a lamp and a
5 sideview having a lamp for a vehicle, according to the present invention
are explained in detail with reference to the accompanying drawings.
However, the invention is not limited to the embodiment. Constituent
elements of the embodiments include elements that can easily be
replaced by persons skilled in the art and elements that are
10 substantially the same. The outer mirror for a vehicle can be applied
to a mirror provided on an outside of the vehicle for indirectly seeing a
position that cannot be easily directly seen from a driver. A lamp unit
is synonymous with a lamp. A lamp includes one which lights up to
serve a given function such as turn indicators, width indicators, and
15 hazard lights.

[0034]

(First embodiment)

Fig. 1 is a schematic assembly diagram for illustrating a first
example of an outer mirror having a lamp for a vehicle in connection
20 with a first embodiment. The outer mirror is an example of a sideview
mirror 1 provided on a left side of a vehicle. The sideview mirror 1
includes a housing 2, reflectors 3 and 4, light sources 5 and 6, lenses 7
and 8, and a garnish 9. To secure a function as the sideview mirror 1,
the housing 2 is provided therein with a mirror member, a motor that
25 can adjust an angle of the mirror member, a gear, and the like.

[0035]

In the case of the sideview mirror 1, the garnish 9 which is the outermost plate serves as a chassis. In the case of a sideview mirror 1 having no garnish 9, the housing 2 itself serves as the chassis.

5 Windows 10 are provided in a portion of a back surface (front surface of the vehicle) of the garnish 9. The garnish 9 largely bulges in the lateral direction of the vehicle from the housing 2. A window for irradiating rearward of the vehicle may be formed between the housing 2 and an outside portion of the sideview mirror 1 furthest from the
10 vehicle.

[0036]

After the garnish 9 is assembled, the housing 2 is positioned inside the windows 10. The reflector 3 which reflects light from the light source 5 is provided between the housing 2 and the garnish 9,
15 more preferably on the housing 2 itself. To provide the reflector 3 on the housing 2 itself, deposition, plating or high reflection coating can be utilized. The light source 5 is provided on a back side of the garnish 9 such as to be opposed to the reflector 3 such that a back surface of the light source 5 is directed forward of the vehicle which is the final
20 irradiation direction. Thus, the light from the light source 5 is reflected by the reflector 3, the light is completely indirectly distributed, and emitted from the windows 10 opened in the final irradiation direction of the lamp.

[0037]

25 When a lamp unit which irradiates not only forward of the

vehicle but also rearward of the vehicle with light is provided on the sideview mirror 1, the light source 6 is provided on a outside of the housing, the light from there is reflected by the reflector 4 and emitted from a window formed between the garnish 9 and the housing 2. In such a case, a new light source 6 may be provided as described above. Light from the light source 5 may be introduced rearward of the vehicle the reflector 4. Although the light source 6 is provided on the side of the housing 2 in Fig. 1, it may be provided on the side of the garnish 9.

[0038]

In typical light sources 5 and 6, LEDs having leads are mounted on boards by dip soldering. When a height (thickness) of the light source is largely limited and the layout on the sideview mirror is limited, a light source in which LEDs are mounted on a surface of a flexible board made of glass epoxy and the like is used. If the LEDs are mounted on the surface, its height (thickness) is reduced as thin as 2 millimeters for example. With this thickness, together with flexibility of the flexible board, it is possible to design so as not to deteriorate the design of the sideview mirror.

[0039]

Conventionally, when high-intensity LEDs are used, impression on a point-source was needed to be corrected by the lens. The outer mirror having a lamp of the present invention is such that the light from the light source is completely indirectly distributed by the reflectors 3 and 4 even if lens 7 and 8 are clear or translucent. Thus, positions of the light sources 5 and 6 are inconspicuous and the entire windows 10

can light up brightly and excellent design can be made. The lens may be provided with a prism as required.

[0040]

Fig. 2 is a cross section of a sideview mirror having a lamp for a vehicle in connection with first embodiment. A portion of a housing 12 of the sideview 11 is covered with a garnish 13. A mirror operating unit 15 which adjusts an angle of a mirror member 14 is accommodated inside the housing 12. As the light source, LEDs 16 mounted on a surface of a flexible board is used. A reflector 17 is provided on a back surface of the housing 12, and light from the light source is distributed completely indirectly. If the final irradiation direction of the light is covered with a clear or translucent lens 18, a lamp unit can be formed in a narrow space formed between the housing 12 and the garnish 13. Thus, a layout of the light source can comply with the design curved surface of the outer mirror, and the flexibility of the luminous intensity distribution design is enhanced.

[0041]

Fig. 3 is an external view of the outer mirror in connection with the first embodiment. In this outer mirror, the light source is provided on the back side thereof between windows 23 and 24. Thus, the light source cannot be seen from outside. The light from the light source is reflected by a reflector and the light is emitted from the entire windows 23 and 24. A garnish 20 bulges outward from an outer side of an outer end of a mirror of the housing 21 by a predetermined distance 22. As a result, a substantially crescent or square window is formed in the gap.

The light is emitted from the window rearward of the vehicle, and the window can also serve as a turn indicator.

[0042]

Fig. 4 is a schematic diagram for illustrating a state of a light
5 distribution of the outer mirror. Fig. 4(a) illustrates a state of a forward
light distribution and Fig. 4(b) illustrates a state of a rearward light
distribution. In the case of the forward luminous intensity distribution,
light from a light source 25 is reflected by a reflector 26 provided on a
back surface of the housing, and the light is emitted forward of the
10 vehicle through a clear or translucent lens 27, having a prism in some
cases, as shown with arrows.

[0043]

In the case of the rearward luminous intensity distribution, as
shown in the Fig. 4(b), a window 29 which is opened in the final
15 irradiation direction of light is provided in a part of a housing located
outside of an outer end of a mirror. Light from a light source 28 is
reflected by a reflector 30 which is integrally formed on the housing,
and the light is distributed indirectly and emitted rearward of the vehicle.
The window 29 is displaced forward from a mirror surface in an
20 advancing direction of the vehicle. With this configuration, light
emitted through the window is shielded by the housing located on the
outer end of the mirror, and the light is prevented from directly entering
the eyes of a driver. Thus, the viewability of the sideview mirror by the
driver is not deteriorated, and a turn indicator which can easily be seen
25 from a following car can be formed.

[0044]

The sideview mirror of this invention in connection with the first embodiment is such that the lamp unit of the mirror completely indirectly distributes light from the light source by the reflector. Thus, 5 it is advantageous that light can be distributed in any irradiation direction depending upon design of the reflector without paying attention to a position or an orientation of the light source. When a light source in which the LEDs are mounted on the surface of the flexible board is used, due to the flexibility and size of the board, it is 10 advantageous that the flexibility in layout of the light source is remarkably enhanced even if the space in the mirror housing or in the garnish is small.

[0045]

(First modification)

15 Fig. 5 is a schematic assembly diagram for illustrating an example of the outer mirror of a first modification of the first embodiment. This outer mirror is an example of the sideview mirror provided on the left side of the vehicle. The sideview mirror 31 includes a housing 32, reflectors 33 and 34, light sources 35 and 36, 20 lenses 37 and 38, and a garnish 39.

[0046]

Vertically long two windows 40 are formed in a portion of a back surface of the garnish 39. As described above, the garnish 39 largely bulges outward from the housing 2, and the windows may be formed 25 between the outermost side of the sideview mirror 1 and the housing 2

as described the above first embodiment.

[0047]

The light source 35 is provided on the back side of the garnish 39 and between the two windows 40, and the housing 32 itself is
5 provided with the reflector 33 which reflects light from the light source 5 as described above. The light from the light source 35 is reflected by the reflector 33 and is distributed completely indirectly, and emitted from the windows 40 which are opened in the final irradiation direction of the lamp as described above.

10 [0048]

When a lamp unit which emits light not only forward but also rearward of the vehicle is provided on the sideview mirror 1, the light source 36 may be provided on a side of an outside of the housing, light from the lamp may be reflected by the reflector 34, and the light may be
15 emitted from the windows formed between the garnish 39 and the housing 32 as described above. The outer mirror having a lamp of this invention is such that the mirror can satisfy various designs.

[0049]

Fig. 6 is an external view of the outer mirror in connection with
20 the first modification of the first embodiment. In this outer mirror, since the light source is provided on the back side between the windows 43 and 44, the outer mirror has a feature that the light source cannot be seen from outside. The light from the light source is reflected by the reflectors and emitted from the entire two windows 43 and 44. The
25 garnish 41 bulges outward from the outside of the outer end of the

mirror of the housing 42 by a predetermined distance 45, and the substantially crescent or square windows may be formed therebetween. In this case, the light can be emitted from the windows rearward of the vehicle.

5 [0050]

(Second modification)

Fig. 7 is a schematic assembly diagram for illustrating the outer mirror in connection with a second modification of the first embodiment. This outer mirror is also an example of the sideview mirror provided on
10 the left side of the vehicle. This outer mirror is different from the above outer mirror of the first modification mainly in that a reflector 53 has a different shape. The single reflector 53 can distribute light forward and rearward of the vehicle. That is, a left half of the reflector 53 illustrated in Fig. 7 is designed to reflect light from a light source 54
15 forward of the vehicle, and a back surface of a right half is designed to reflect light from a light source 55 rearward of the vehicle.

[0051]

Fig. 8 is an external view of the outer mirror in connection with the second modification of the first embodiment. In this outer mirror 60,
20 a lens cover 61 fitted to a window is formed such as to cover an end of the outer mirror 60. The light is emitted forward and rearward of the vehicle by the reflector disposed in the deep side of the cover. According to the outer mirror having a lamp of this invention, the mirror can satisfy such a design.

25 [0052]

(Third modification)

Fig. 9 is a schematic assembly diagram for illustrating the outer mirror in connection with a third modification of the first embodiment.

This outer mirror is also an example of an exterior rear mirror provided
5 on the left side of the vehicle. This outer mirror is different from the
above outer mirror of the first modification and the second modification
in that the mounting position of a light source 72 is different. In a
reflector 73 of this outer mirror 71, like the reflector as described the
above second modification, a left half of the reflector 73 is designed to
10 reflect light forward of the vehicle, and a back surface of a right half is
designed to reflect light from a light source 74 rearward of the vehicle.
A thin light source 72 in which LEDs are mounted on a surface of a
flexible board is inwardly provided on a running-up portion 75 on the
outside of the reflector 73. Even if this configuration is made, the light
15 from the light source 72 is reflected by the reflector 73, and is
introduced into the final irradiation direction, the position of the light
source can be inconspicuous when seen from the final irradiation
direction of light.

[0053]

20 Fig. 10 is an external view of the outer mirror in connection with
the third modification of the first embodiment. In an outer mirror 80, a
large single lens cover 81 covers an end of the outer mirror 80. Light
is emitted forward of the vehicle by a light source provided on a
running-up portion on a surface of a reflector located in the deep
25 portion of the cover. Light from the light source provided in the

housing is reflected to a back surface of the reflector and is emitted also rearward of the vehicle. Since the light source in which LEDs are mounted on a surface of a flexible board is thin, the light source can be used in a special manner such that the light source can be provided on
5 the reflector itself. The light can be emitted to any direction if the reflector is designed appropriately. The outer mirror having a lamp of this invention can satisfy such a design.

[0054]

(Second embodiment)

10 Fig. 11 is a cross section of the outer mirror in connection with the second embodiment. A configuration of a basic portion of this outer mirror is the same as that of the outer mirror explained in the first embodiment. This second embodiment has a feature that the lamp includes a chassis, that is, the lamp is sub-assembled with a garnish 85
15 in this case as one unit. The garnish 85 is provided with a window 86 in the final irradiation direction of light. The window 86 is provided with a clear or translucent lens 87 or a lens having a prism. The lens 87 may be integrally formed on the garnish 85 or a separate member may be fitted to the lens 87.

20 [0055]

A cover 88 is provided around a back side of the window 87 such as to cover the window from its back side. With this cover, a space 89 having a given capacity is formed on the back side of the garnish 85. A reflector 91 and a light source 90 in which LEDs are
25 mounted on a surface of the flexible board and which is opposed to the

reflector 91, are provided in the cover 88. The light source 90 comprises a flexible board and. When two or more windows 86 are to be formed, each window 86 may be provided with the cover 88 such as to cover the window from its back side, or one cover 88 may cover all of
5 the windows 86 from the back side.

[0056]

If the reflector is formed on the inner surface of the cover 88, the operability is further enhanced and the number of parts can be reduced. If a gap between the lens 87 and the garnish 85 and a gap
10 between the garnish 85 and the cover 88 are sealed, the lamp unit assembly is hermetically closed in a water-proof manner. With this configuration, the lamp 92 and the garnish 85 can be integrally formed together as one unit, and they can be handled easily. If the garnish 85 is put on the housing 93 so as to cover the housing, the outer mirror
15 having a lamp can easily be formed. When the outer mirror is provided with the water-proof function, the wiring of the light source 90 is preferably sealed so that water-proof function of the space is not deteriorated.

[0057]

20 [Effects due to the Invention]

According to the outer mirror (claim 1) having a lamp of the present invention, the flexibility in the light distribution design and the layout of the light source is improved by the completely indirect light distribution design, as compared with the directly distributed light.
25 Further, since it is not necessary to expose the light source, according

to the completely indirect light distribution design, the flexibility in design is improved in view of the appearance.

[0058]

According to the outer mirror (claim 2) having a lamp of the
5 present invention, the flexibility in the light distribution design and the layout of the light source is improved by the completely indirect light distribution design, as compared with the directly distributed light. Further, since it is not necessary to expose the light source, according to the completely indirect light distribution design, the flexibility in
10 design is improved in view of the appearance, thereby providing high-quality impression. The illumination apparatus can be attached to the outer mirror, without requiring excess parts and space.

[0059]

According to the outer mirror (claim 3) having a lamp of the
15 present invention, since the LEDs mounted on the substrate having excellent flexibility are used, the layout of the light source becomes possible following the designed curved surface of the outer mirror, in addition to the effects according to claim 1 or 2. As a result, the flexibility in the light distribution design is improved.

20 [0060]

According to the outer mirror (claim 4) having a lamp of the present invention, a thin illumination apparatus having high flexibility in the layout of the light source can be sub-assembled (formed in a unit), thereby improving the labor effectiveness, such as reduction of an
25 operation error at the time of assembly operation.

[0061]

According to the outer mirror (claim 5) having a lamp of the present invention, in an outer mirror in which a garnish is covered on the mirror housing, if a thin illumination apparatus is sub-assembled
5 (formed in a unit), and integrated with the garnish, excess consideration is not required during the assembly operation, thereby improving the labor effectiveness.

[0062]

According to the sideview mirror (claim 6) having a lamp of the present invention, the flexibility in the light distribution design and the
10 layout of the light source is improved by the completely indirect light distribution design, as compared with the directly distributed light. Further, since it is not necessary to expose the light source, according to the completely indirect light distribution design, the flexibility in
15 design is improved in view of the appearance. The illumination apparatus improves visibility from the front and the rear sides, and a turn signal lamp suitable for a design having a high quality impression can be formed.

[0063]

20 According to the sideview mirror (claim 7) having a lamp of the present invention, since the LEDs mounted on the substrate having excellent flexibility are used, the layout of the light source becomes possible following the designed curved surface of the sideview mirror, in addition to the effects according to claim 4. As a result, the flexibility
25 in the light distribution design is improved.

[0064]

According to the sideview mirror (claim 8) having a lamp of the present invention, since the window opened to the final irradiation direction of light in a portion of the chassis, located outside the mirror
5 outer end is provided, shifted forward stepwise from the mirror surface, with respect to the advancing direction of the vehicle, it is prevented that the light of the illumination apparatus directly enters the eyes of the driver. As a result, a turn signal lamp having excellent visibility with respect to the following vehicle can be formed, without deteriorating the
10 visibility of the sideview mirror from the driver.

[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a schematic assembly diagram for illustrating a first example of an outer mirror having a lamp for a vehicle.

15 [Fig. 2]

Fig. 2 is a cross section of a sideview mirror having a lamp for a vehicle.

[Fig. 3]

Fig. 3 is an external view of the outer mirror having a lamp in
20 connection with a first embodiment.

[Fig. 4]

Fig. 4 is a schematic diagram for illustrating a state of a light distribution, Fig. 4(a) illustrates a state of a forward light distribution of the outer mirror, and Fig. 4(b) illustrates a state of a backward light
25 distribution of the outer mirror.

[Fig. 5]

Fig. 5 is a schematic assembly diagram for illustrating the outer mirror in connection with a first modification of the first embodiment.

[Fig. 6]

5 Fig. 6 is an external view of the outer mirror in connection with the first modification of the first embodiment.

[Fig. 7]

Fig. 7 is a schematic assembly diagram for illustrating the outer mirror in connection with a second modification of the first embodiment.

10 [Fig. 8]

Fig. 8 is an external view of the outer mirror in connection with the second modification of the first embodiment.

[Fig. 9]

15 Fig. 9 is a schematic assembly diagram for illustrating the outer mirror in connection with a third modification of the first embodiment.

[Fig. 10]

Fig. 10 is an external view of the outer mirror in connection with the third modification of the first embodiment.

[Fig. 11]

20 Fig. 11 is an external view of the outer mirror in connection with the second embodiment.

[Fig. 12]

Fig. 12 is a plan view depicting the overall configuration of a conventional sideview mirror.

25 [Fig. 13]

Fig. 13 is a cross section depicting the schematic configuration around a lamp unit of a sideview mirror.

[Fig. 14]

Fig. 14 is a plan view depicting the overall configuration of a
5 sideview mirror of another type.

[Fig. 15]

Fig. 15 is a cross section in the longitudinal direction, depicting the configuration of the lamp unit.

[Description of Signs]

10	1, 11, 31, 71, 130	sideview mirror
	2, 12, 21, 32, 42	housing
	3, 4, 17, 26, 30, 33, 34, 53, 73, 75, 91, 138	reflector
	5, 6, 25, 28, 35, 36, 54, 55, 72, 74, 90	light source
	7, 18, 27, 37, 87, 133, 137	lens
15	9, 13, 20, 39, 41, 85	garnish
	10, 23, 29, 40, 43, 86	window
	14, 107	mirror member
	60, 80	outer mirror
	108, 132	lamp unit
20	108, 132	lamp unit
	109	housing body
	110	cover body
	112	mirror window
	115	opening
25	116	irradiation unit

[Type of Document] Abstract

[Abstract]

[Object] To provide an outer mirror having a lamp and a sideview mirror having a lamp that is considered a flexibility of light distribution layout and design.

[Means] A sidview mirror consists of a housing 2, reflectors 3, 4, a light source 5, lenses 7, 8, and garnish 9. Windows 10 are provided in a portion of a back surface of the garnish 9. The reflector 3 which reflects light from the light source 5 is provided between the housing 2 and the garnish 9. The light source 5 is provided on a back side of the garnish 9 such as to be opposed to the reflector 3 such that a back surface of the light source 5 is directed forward of the vehicle which is the final irradiation direction. Thus, the light from the light source 5 is reflected by the reflector 3, the light is completely indirectly distributed, and emitted from the windows 10 opened in the final irradiation direction of the lamp.

[Selected Figure] Fig .1

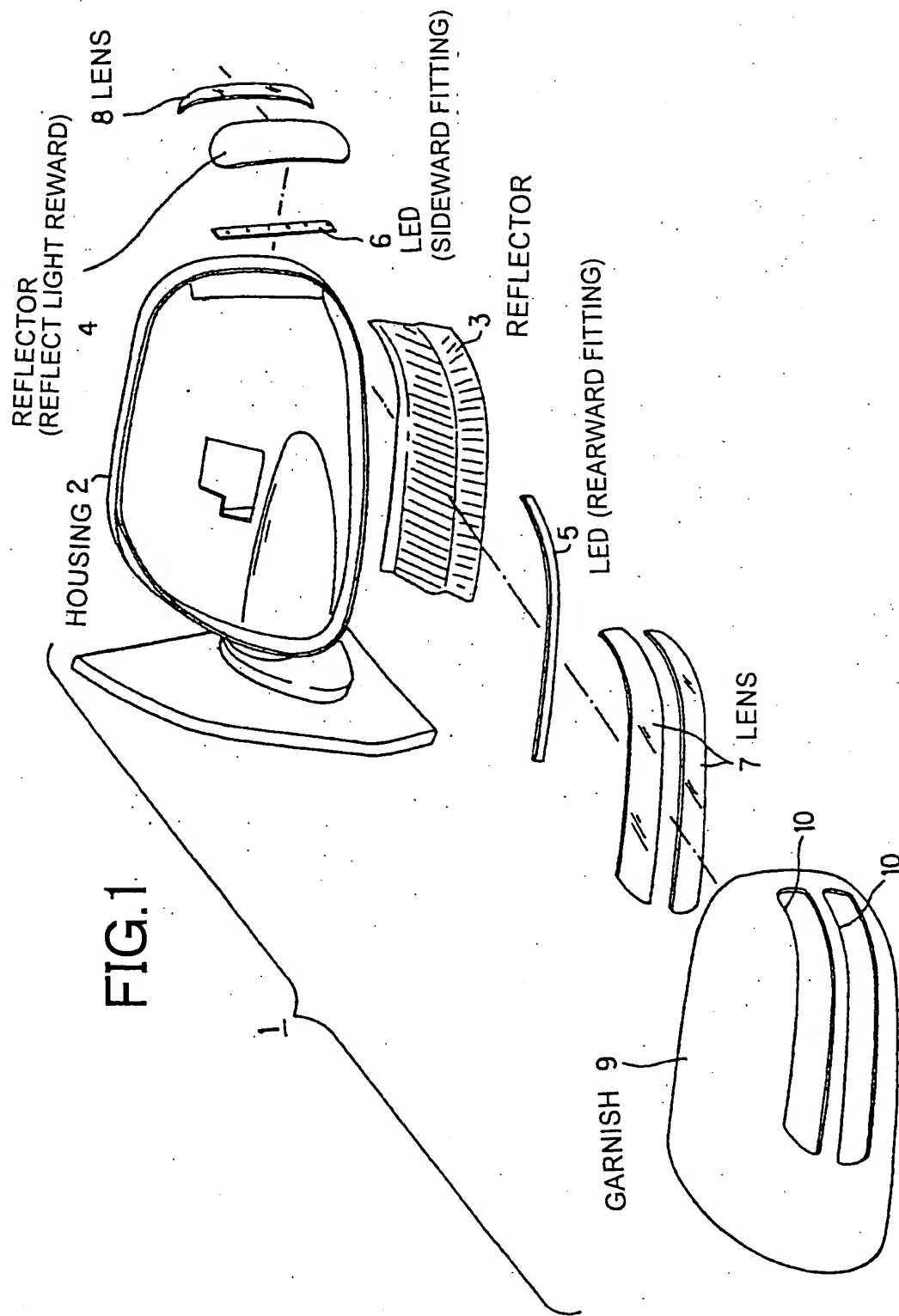
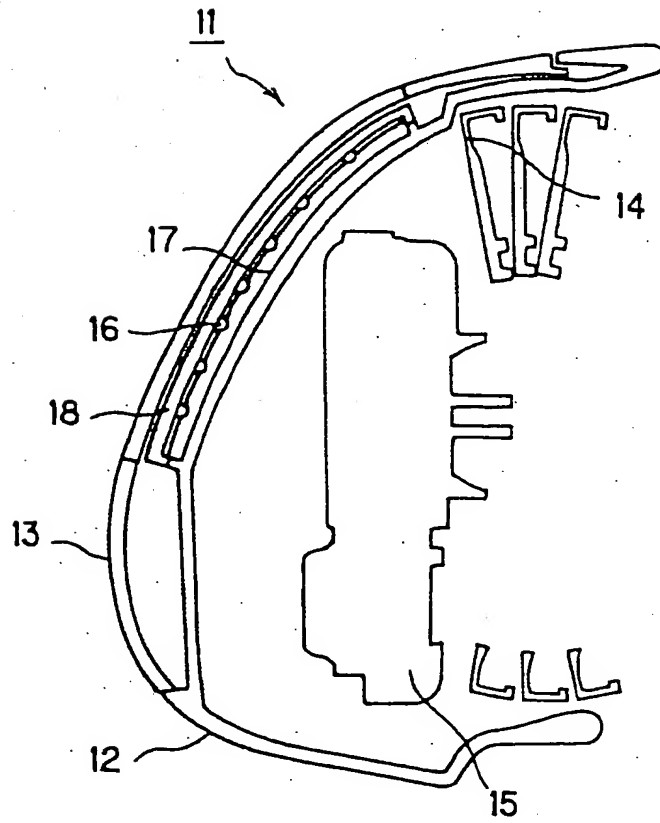


FIG.2



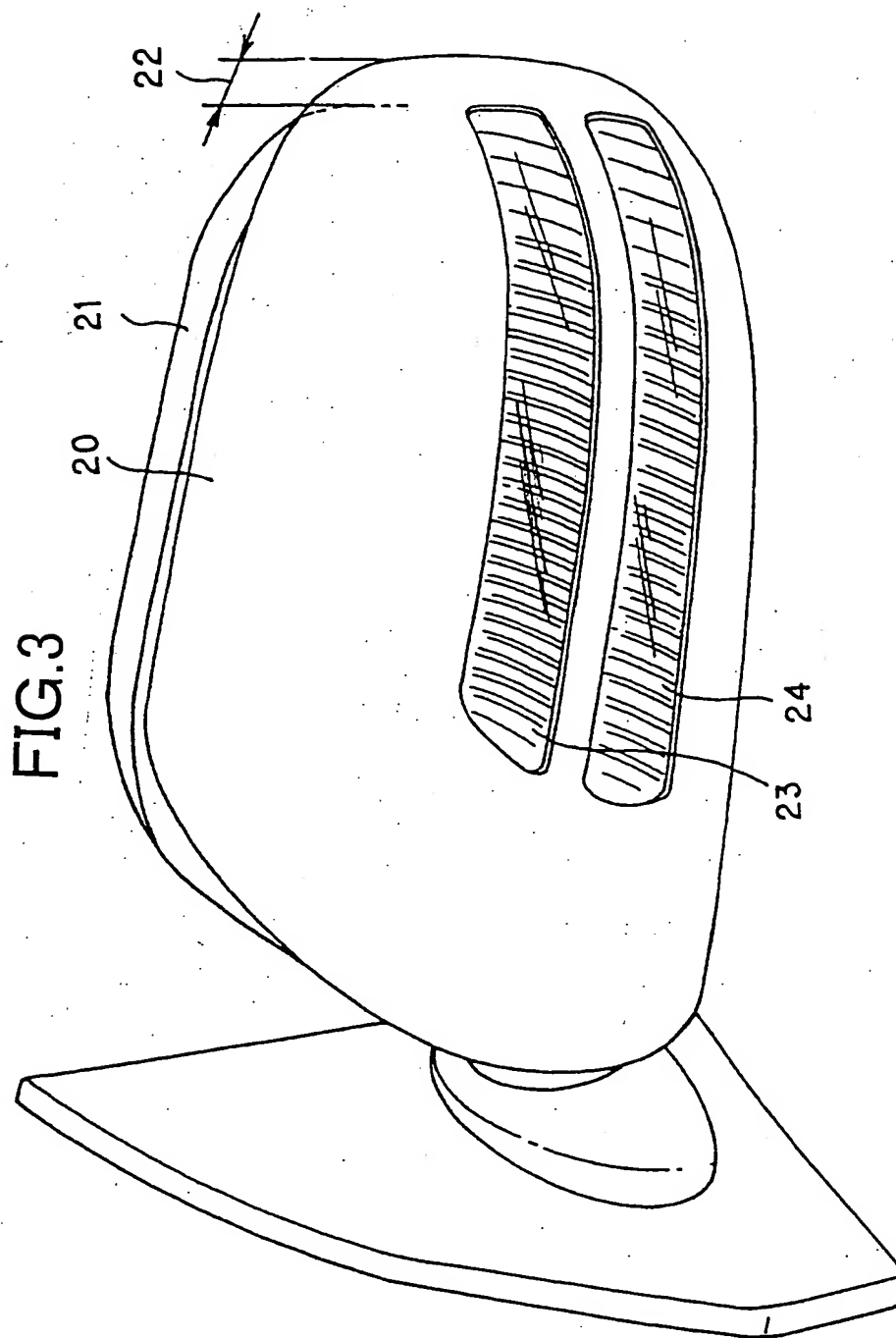


FIG.4

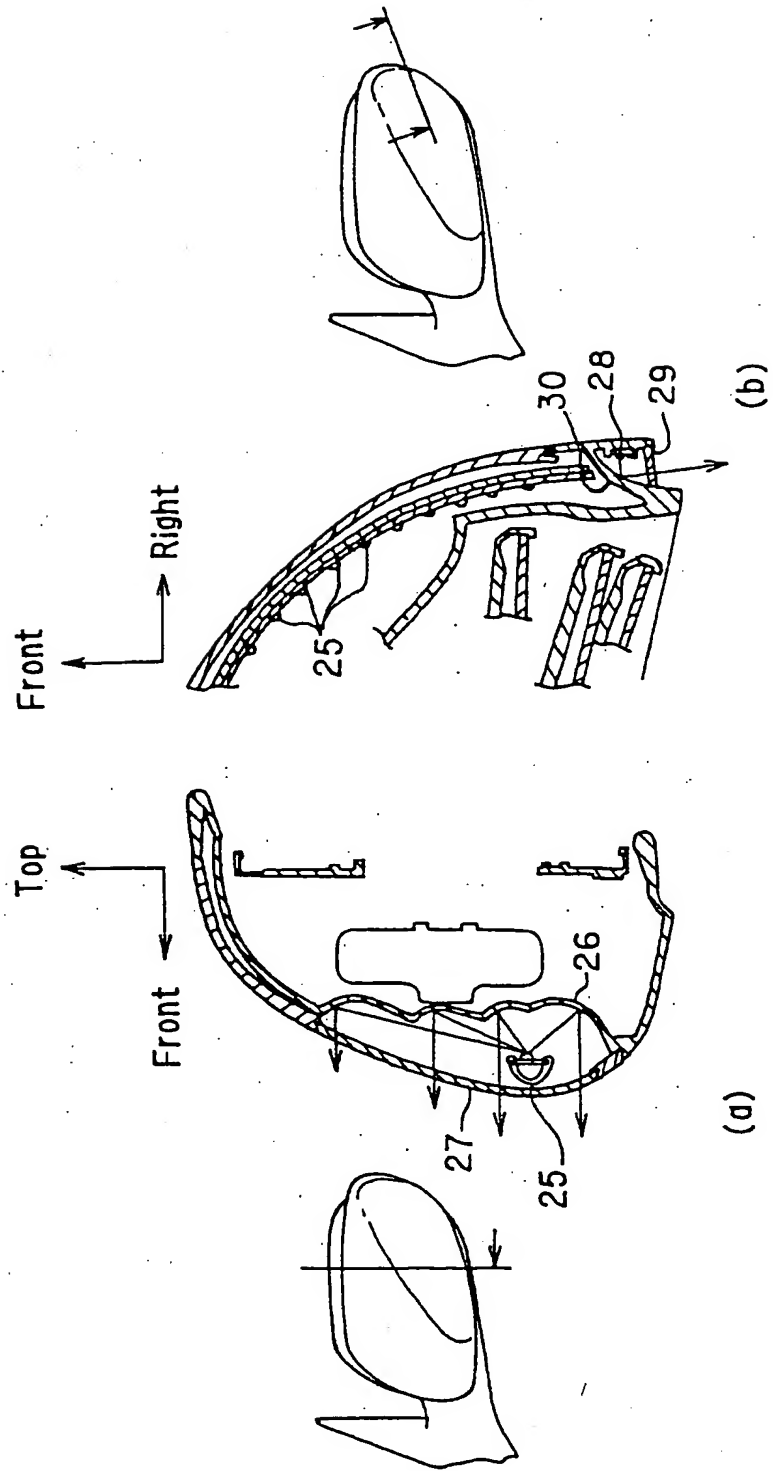
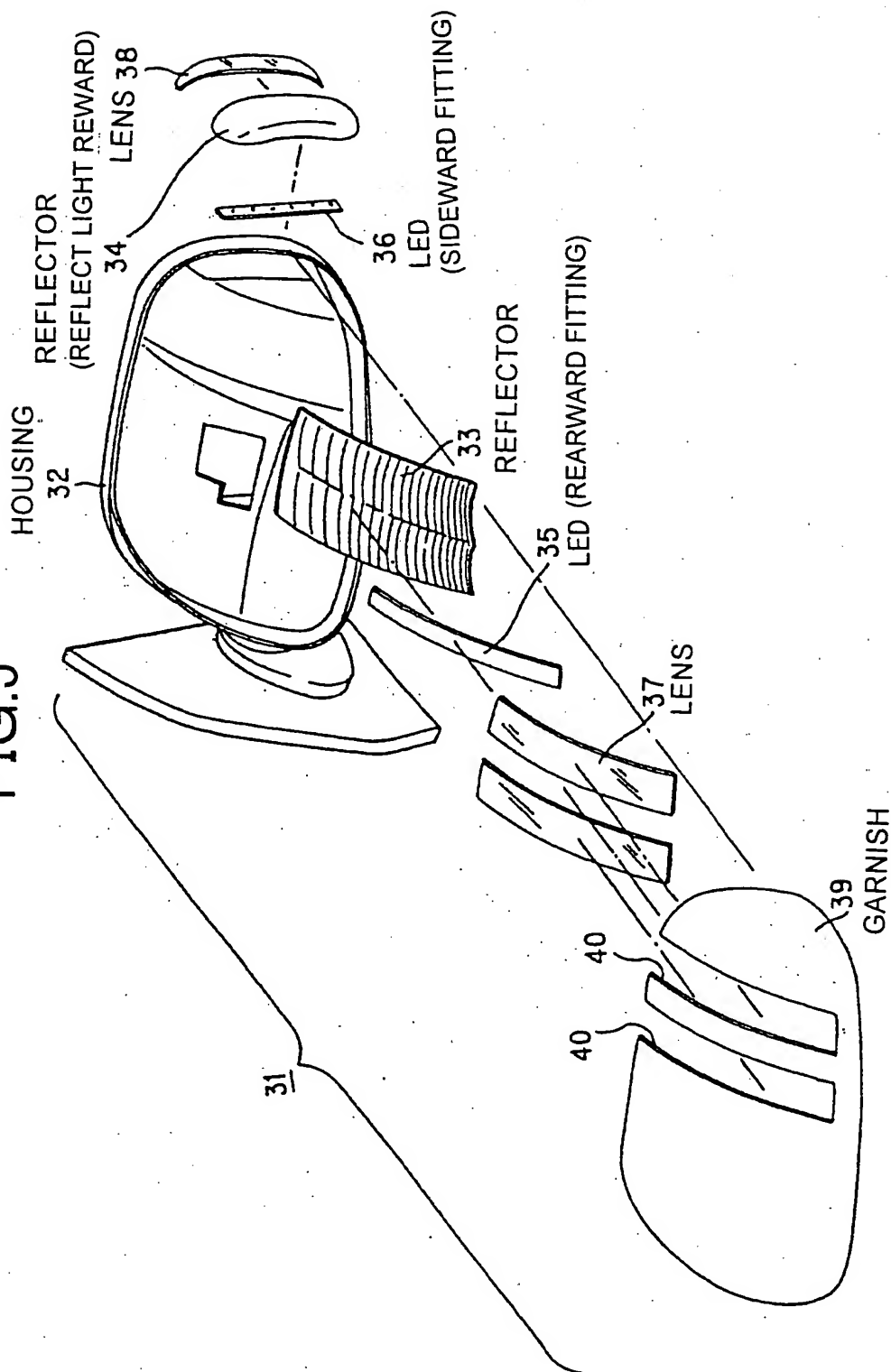


FIG. 5



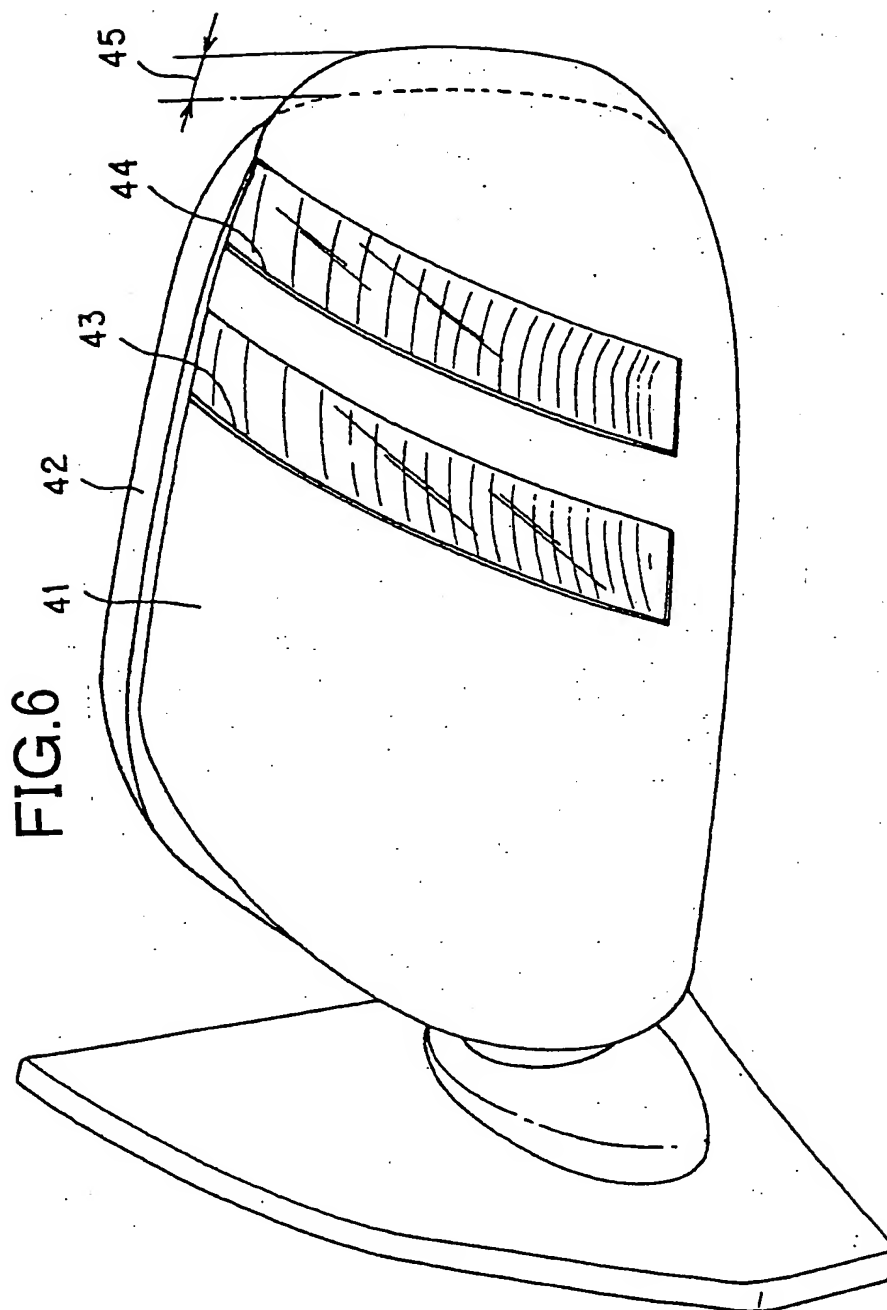
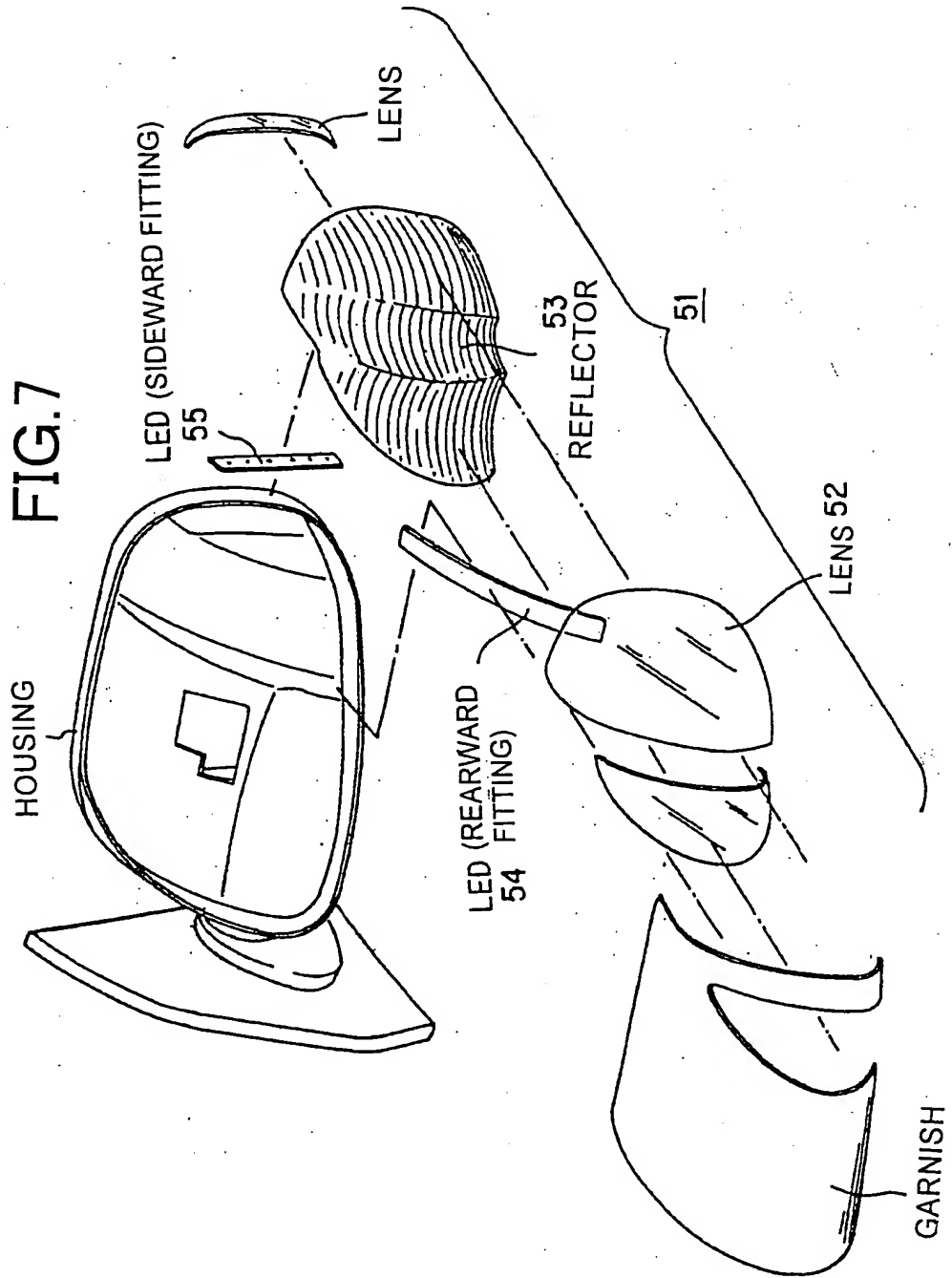


FIG. 7



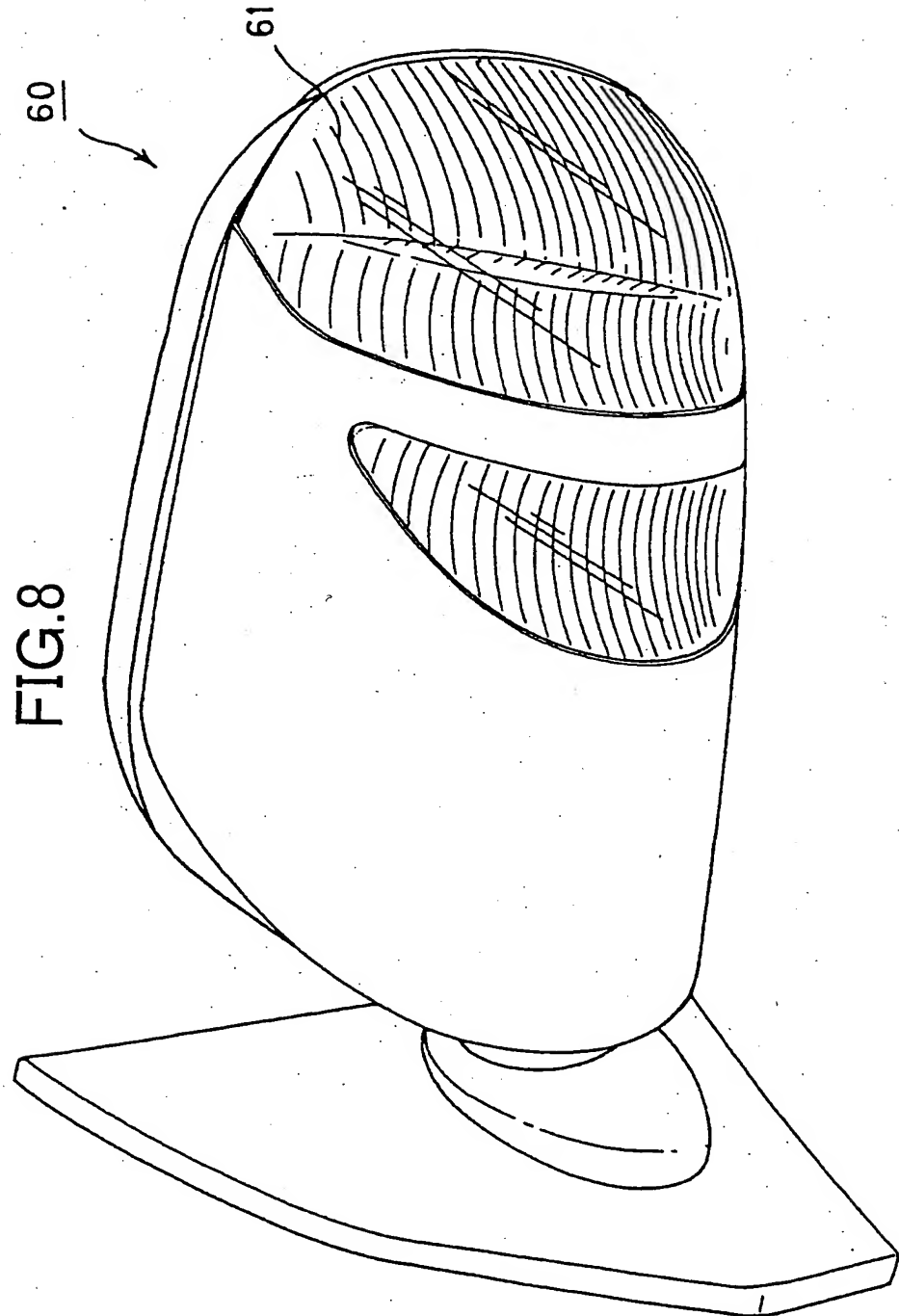
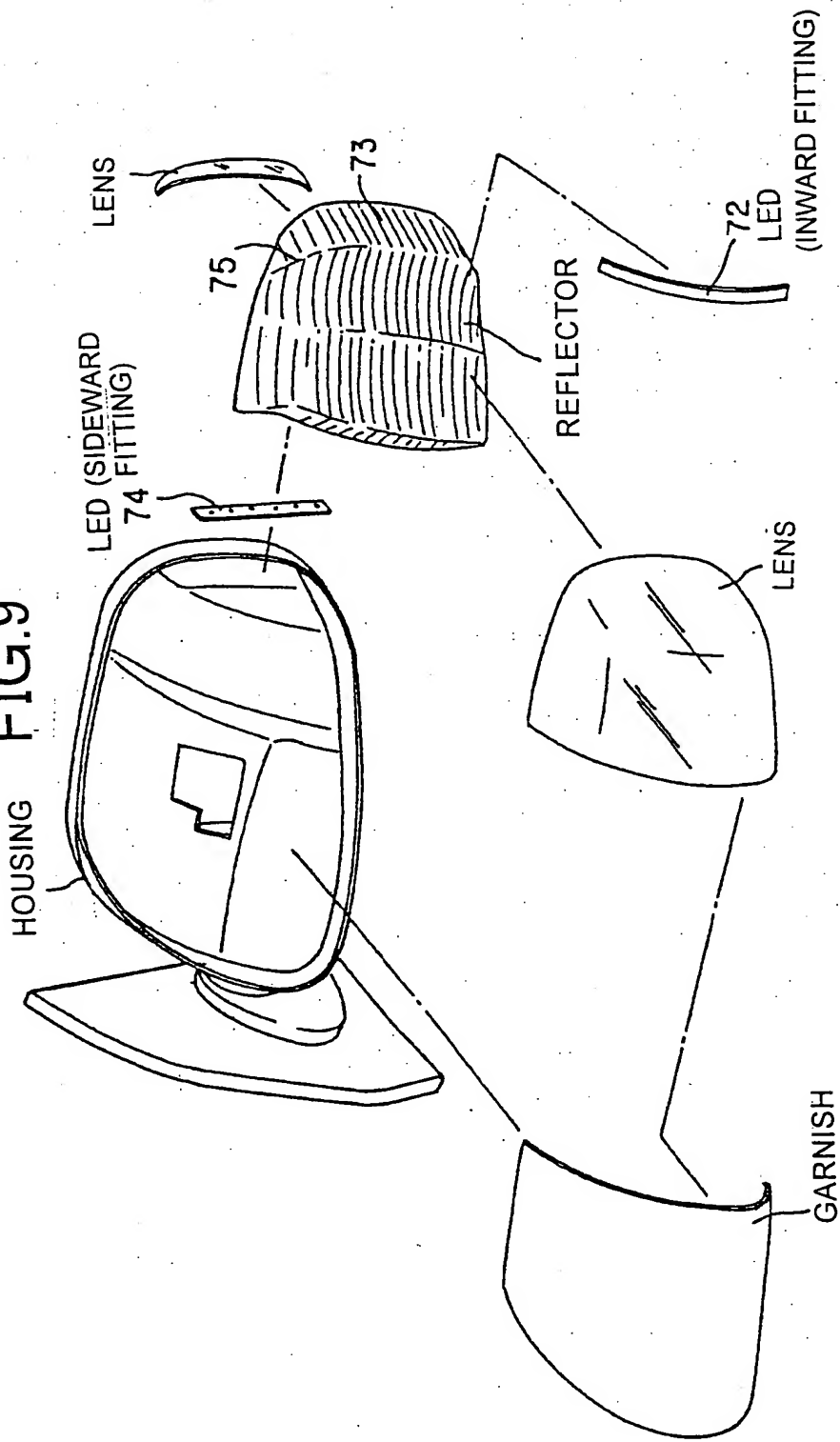


FIG. 8

FIG. 9



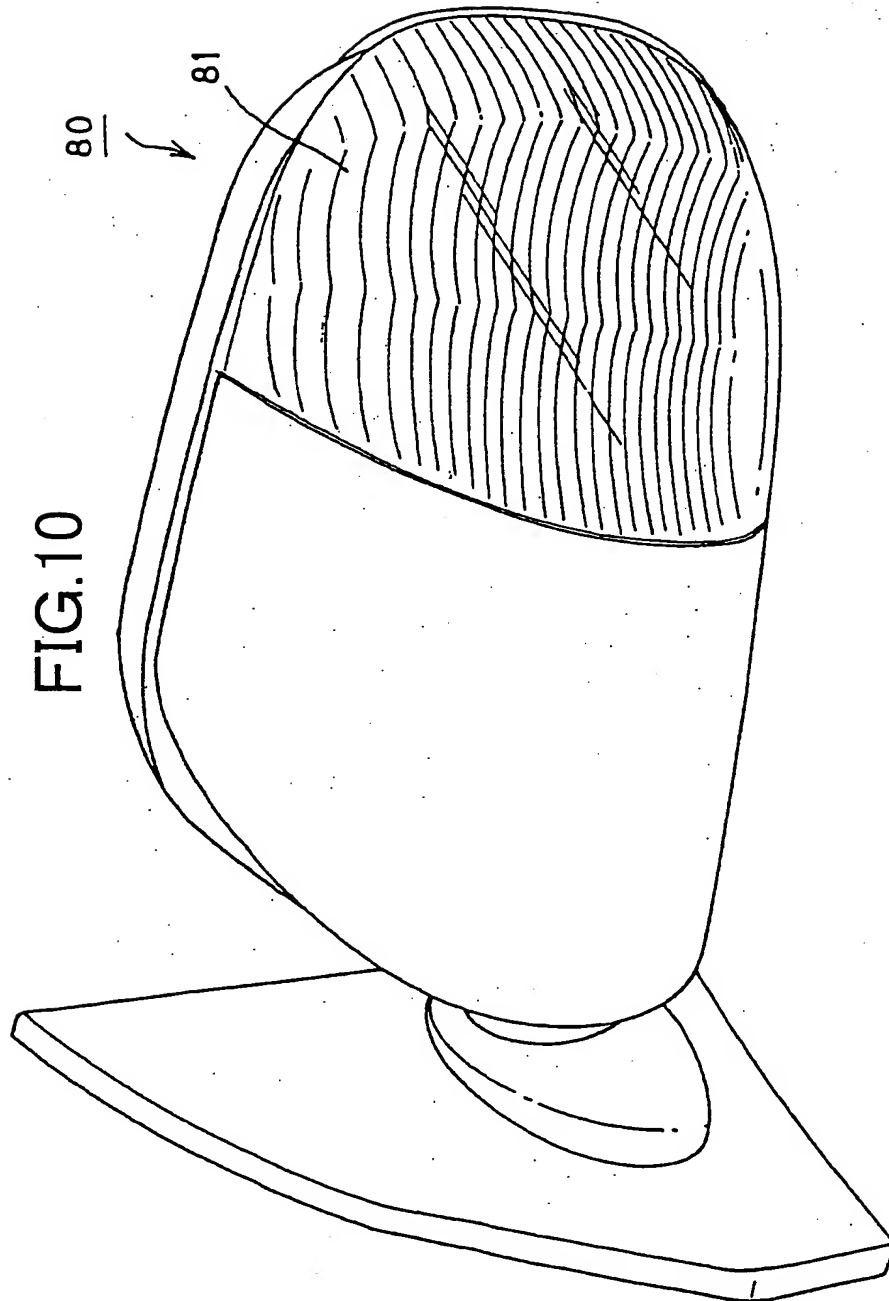


FIG. 10

FIG. 11

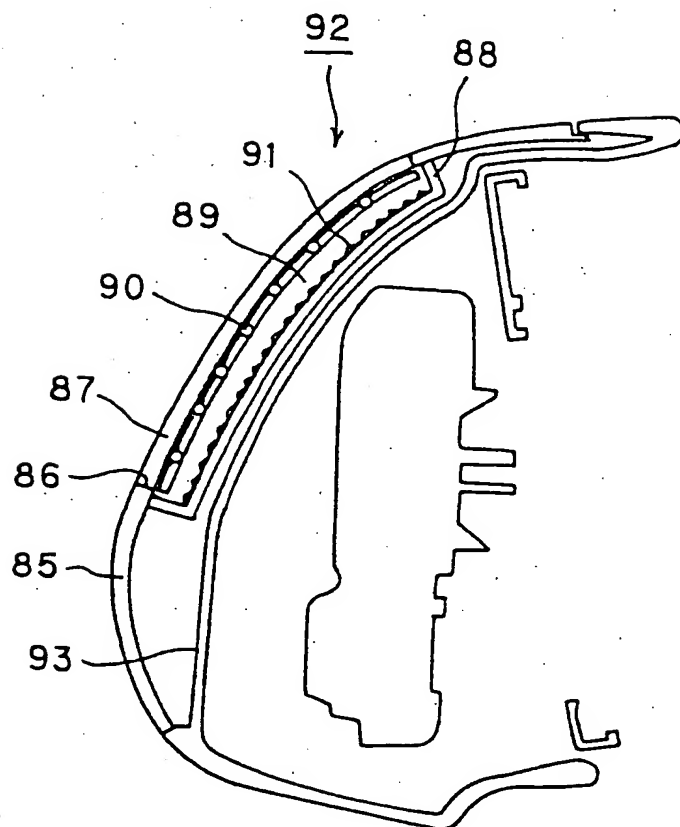


FIG.14

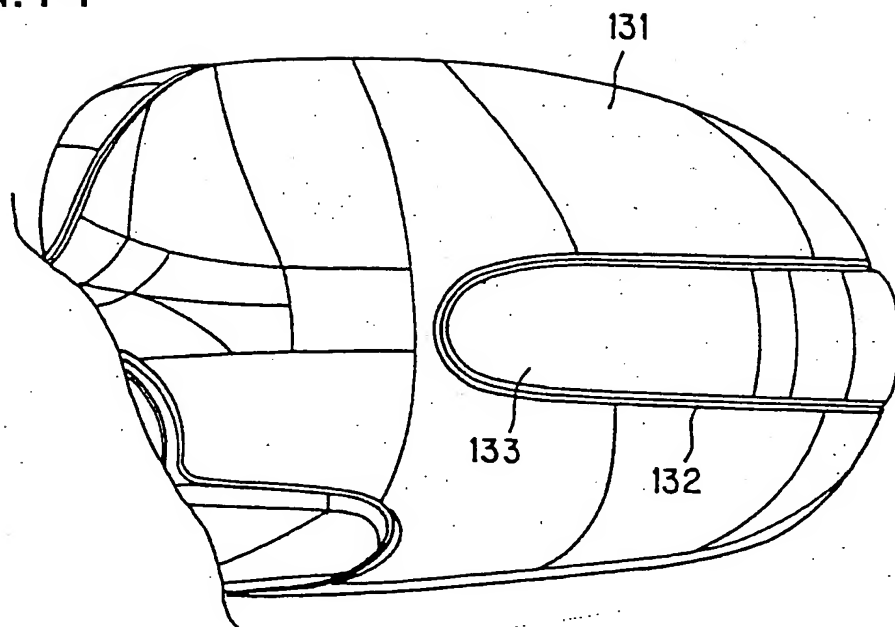


FIG.15

